Unisexual Generation of *Andricus atrimentus*

(Hymenoptera: Cynipidae)

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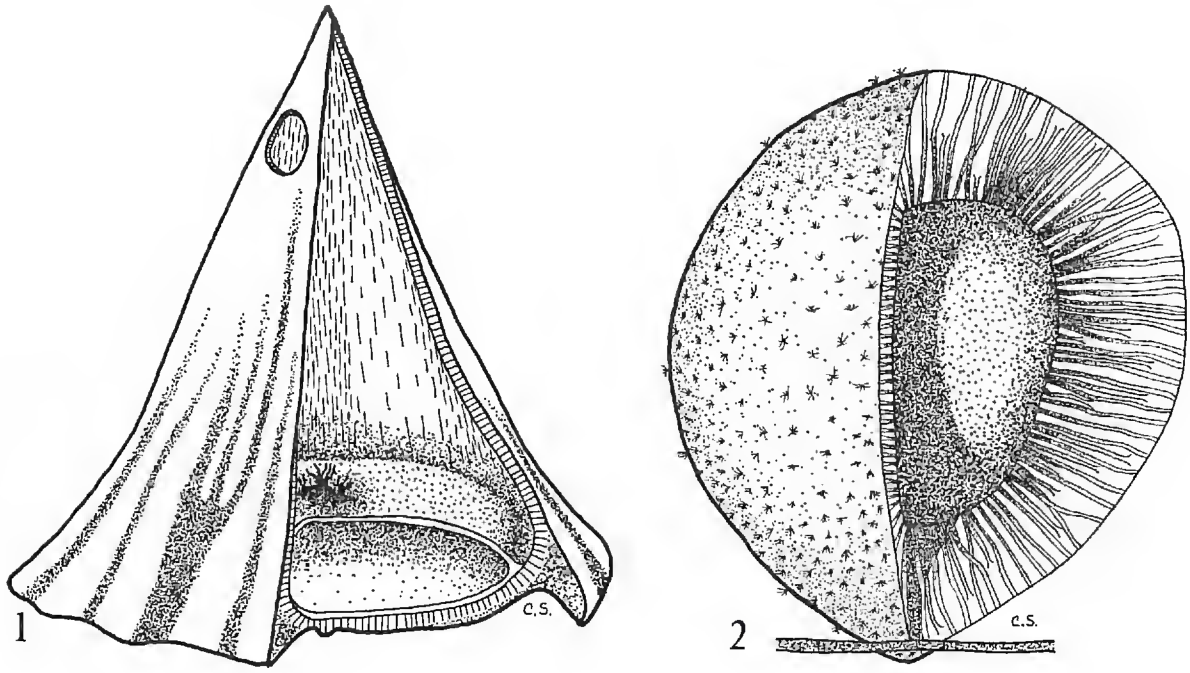
The previously undescribed unisexual generation of *Andricus atrimentus* Kinsey (1922), a cynipid gallmaker occurring on *Quercus douglasii* Hooker & Arnott has formerly been considered identical to *Andricus kingi* Bassett from *Quercus lobata* Nee, both *Lepidobalanus* or white oaks. This was probably due to the similarity of their unisexual generation galls (Weld, 1957). Both are red, conical, detachable leaf galls. Weld reared insects and supplied unisexual generation galls of *Andricus atrimentus* to Houard (1946). Due to the coriaceous mesoscutum of the unisexual generation, the species is hereby removed from its present assignment in *Dros* Kinsey and returned to its original placement in *Andricus* Hartig. Kinsey's description of the tarsal claws being simple in the bisexual generation insects is erroneous. Toothed condition of the claws is consistent with the unisexual generation, its occurrence on white oaks, and its placement in *Andricus*.

Female wasp.—*Head*: coriaceous; cheeks not widened behind eyes, slightly narrower than thorax, occiput not concave; malar space 0.4 eye height, not grooved; antennae filiform, segment one longer than two, segment three longer than four, 14 segmented with 13 = 14 or 13 with 13 twice as long as 12. *Thorax*: mesoscutum polished coriaceous, smoother posteriorly, longer than broad, sparsely pubescent; anterior parallel lines indistinct, less than one-half length of mesoscutum; notaulices complete, polished, wider posteriorly; median groove distinct, only slightly longer than width of notaulix at the scutellar suture; parapsidal lines indistinct. Scutellum reticulate posteriorly, sparsely pubescent with smooth area behind foveae; foveae smooth, polished, bare. Propodeum rugose. Wing surface and hind margin pubescent, aerolet 1/10 to 1/12 length of first cubital cell, occasionally obsolete in plesiotypes; cubital and radial cells open, radial cell 3.5 times as long as high; R_1 vein arcuate. Tarsal claws toothed. *Abdomen*: slightly longer than head plus thorax, slightly longer than high. Tergite II pubescent at base, II–VII micropunctate, more than two tergites visible in dorsal view. Ventral spine nine times as long as wide, six times as long as high, sparsely pubescent. Color; body uniform dark amber to brown; wing veins yellow to yellow-brown; legs and antennae yellow-brown, latter darker distally. Size: 2.0 mm. Range of 10 specimens 1.7 to 2.2 mm body length (average of 10 specimens 2.0 mm). Total number of specimens 40.

Gall.—Monothalamous, conical, flat-based, detachable, on lower leaf margin. Sides nearly straight, flaring slightly at base. Basal larval cell oval in side view, 1.6 mm in diameter, 0.8 mm high, pubescent. Upper surface of larval cell coriaceous with sparse pubescence; brown, darker towards center. Red and yellow striped

The Pan-Pacific Entomologist 49: 171–173. April 1973



FIGS. 1, 2. *Andricus atrimentus.* 15 × Life Size. FIG. 1. Unisexual generation gall. FIG. 2. Bisexual generation gall.

when fresh, turning to brown and yellow with age (Fig. 1). Size: Height 3.6 to 4.6 mm (average of 10 galls 3.9 mm); width 3.0 to 4.6 mm (average of 10 galls 3.3 mm). Total number of specimens 20.

SYSTEMATICS.—The unisexual generation of *Andricus atrimentus* can be distinguished from *Andricus kingi* by the following characteristics. *Andricus atrimentus* has the head not broadened behind the eyes and slightly narrower than thorax, mesoscutum and scutellum sparsely pubescent, galls red and yellow striped with lateral edges flat or down curved. *Andricus kingi* has the head distinctly narrower than thorax and head broadened behind eyes, mesoscutum and scutellum pubescent, galls red with lateral edges recurved. Rearings of *A. kingi* by Rosenthal and Koehler (1971) and the senior author (unpublished) also confirm separate identity of the bisexual generations of these two species.

LIFE HISTORY.—Five years of field observations by the senior author on an isolated *Quercus douglasii* at Davis, Yolo County, California have shown that the *A. atrimentus* bisexual generation females emerge between 1 and 30 April over a two week period and usually oviposit in the lower leaf surface near the margin. Within 60 days small tan to pink blisters appear at oviposition sites. During the next 30 days galls develop the final conical shape (Fig. 1). Pupation occurs during late October to November and emergence of the unisexual generation females occurs on warm days in late winter. They then oviposit in leaf buds and when the buds open the leaves already contain small blisters. By mid March the integral leaf galls of the bisexual generation usually reach full size and the outer white layer develops its pink tinted tissue paper texture. The blue-black larval cell is connected to the outer layer by numerous blue-black filaments which become white distally (Fig. 2).

Host.—*Quercus douglasii*; similar galls noted on *Quercus dumosa* Nuttall and *Quercus turbinella californica* Tucker but not confirmed by reared insects. Numerous attempts to rear the unisexual generation of *A. atrimentus* on *Quercus lobata* have invariably been unsuccessful.

Distribution.—Apparently throughout the range of the host plants from foothills of Coast Range and west slope of Sierras from Mendocino County to Mohave Desert border.

Plesiotypes.—American Museum of Natural History, New York; United States National Museum, Washington, D. C.; California Academy of Sciences, San Francisco; University of California at Davis; Weld collection, in possession of Robert J. Lyon, Los Angeles City College, Los Angeles, California.

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